

on the 22d. The values during the snow are positive, increasing with the continuance of the snow. Following the snow negative and low positive values; on the 25th negative values precede snow by at least ten hours; on the 27th low positive values, preceding, and on the 28th negative values during, light rain.

At New Haven, Conn., light snow on March 1st was not preceded, accompanied, or followed, by any marked change in the character of the electrometer readings. Low positive values on the 9th precede rain by nine hours, and large negative values occur on the 10th during the rain, turning to positive when the rain ended. Low positive values are recorded on the 17th, preceding light snow; on the 21st low positive values precede rain by nine hours, and rain and snow on the 22d are accompanied by negative and positive values. The following conditions on this date are noteworthy: snow began at 8.50 a. m. and ended at 10.30 a. m., beginning again at 1 p. m.; rain began at 11.20 a. m., ending sometime in the afternoon, begin-

ning again at 6 p. m. The four recorded values are —135.4, 22, 3.8, and 94.2 volts. Rain on the 28th is accompanied by high negative values, turning to low positive when the rain had ended, and increasing in value, although rain began again at 6 p. m.

At Baltimore, Md., where a continuous record is maintained, the most violent disturbance occurred from 5.40 p. m. of the 21st to 11 a. m. of the 22d, during which, for a considerable time, the fluctuations exceeded the limits of the record, 700 volts on either side of the zero. A disturbance of large amplitude, but small duration, occurred from 9.30 p. m. of the 13th to 2.40 a. m. of the 14th. On other dates disturbances occurred, particularly on the 5th, from 3 p. m. to 6.30 p. m.; on the 7th from 8 a. m. to 11 a. m.; and on the 9th from 1 p. m. to 11 p. m. Chart vi shows, in the first diagram, the observations made simultaneously at the Monument and the Sig-Office, and on the other diagrams the observations for the month at Boston, Mass., and at Ithaca, N. Y.

OPTICAL PHENOMENA.

HALOS.

Solar and lunar halos were observed on the 3d and 4th at the majority of stations in Iowa, Illinois, Indiana, southern Wisconsin and Michigan, Ohio, New York, and Massachusetts, preceding and accompanying in these states the highest pressure of the month, and followed in the Lake region and New England on the 4th and 5th by a severe cold wave. During the presence of these halos cirrus and cirro-cumulus clouds, with light haze, prevailed.

On the 6th lunar, and on the morning of the 7th solar, halos were observed at a number of stations in the Lake region and Ohio Valley; they were followed by a steady rise in pressure, the mercury at different stations within these districts rising two to four-tenths of an inch during the succeeding twenty-four hours.

The storm of the 24th was preceded in New England, the middle Atlantic states, and lower lake region by cirro-stratus and cirro-cumulus clouds, with solar halos, which were reported from a number of stations. During the 25th and 26th this low area was succeeded over the northeastern quarter of the United States by rapidly rising pressure, and from the 27th to 29th by a general cold wave, which extended over the greater part of the country. The area of high pressure was accompanied on the 25th and 26th by solar halos which were reported on the 25th from a number of stations in the Ohio and upper Mississippi valleys, and on the 26th, with haze, from sta-

tions in the lower lake region, Ohio valley, and south Atlantic states.

Lunar halos were reported from a large number of stations in the lower lake region and the upper Mississippi valley on the 30th and 31st; those of the 30th were followed by rising pressure.

The phases of the moon (Washington mean time) during March, as given in "The American Ephemeris and Nautical Almanac" for 1887, are as follows: New moon, 23d, 23 h. 1.5 m.; first quarter, 2d, 7 h. 59.5 m., and 31st, 20 h. 44.6 m.; full moon, 9th, 3h. 25.7 m.; last quarter, 15th, 20 h. 33.9 m.; perigee, 9th, 7.0 h.; apogee, 23d, 1.7 h.

MIRAGE.

Fort Maginnis, Mont.: from 10 a. m. until noon of the 4th a very distinct mirage was visible toward the southwest, bringing into view the valley of the Yellowstone River, which is over sixty miles distant. With the aid of a field glass, hills and cañons, covered with undergrowth, were plainly seen.

Mirages were also observed at the following places:

Arizona.—Willcox, 27th, 28th, 29th.

Dakota.—Parkston, 10th, 11th, 24th, 31st; Webster, 1st, 16th, 17th, 18th.

Kansas.—Salina, 1st, 2d, 4th, 7th, 8th, 9th, 15th, 30th; Wakefield, 23d.

Nebraska.—Fairbury and Marquette, 1st.

North Carolina.—Reidsville, 14th, 17th.

MISCELLANEOUS PHENOMENA.

FOREST AND PRAIRIE FIRES.

Forest and prairie fires occurred at the following places:

Fort Reno, Ind. T., prairie fires, 1st, 2d, 16th, 17th; Duke, Fla., forest fires, 1st, 24th; Yankton, Dak., prairie fires, 9th, 10th, 11th, 15th, 16th, 17th; Wytheville, Va., fires on the mountains, 12th, 14th; Hay Springs, Nebr., prairie fires, 13th to 16th; North Platte, Nebr., prairie fires, 14th, 15th, 19th to 24th, 29th; Archer, Fla., forest fires, 16th to 19th, 22d; Pike's Peak, Colo., prairie fires toward the southeast, 22d, 23d, 24th; Fort Meade, Dak., timber fire in the southeast, 23d; Fort Elliott, Tex., prairie fires, 24th, 25th, 29th; Ninnescah, Kans., prairie fires, 25th to 28th; Fort Sill, Ind. T., prairie fires, 27th; Alva, Fla., forest fires, 31st.

METEORS.

Huron, Dak.: at 10.40 p. m. of the 12th a brilliant meteor was seen moving from a point about 20° above the southern horizon. It moved slowly, and parallel to the horizon, disappearing at a point south of west, and leaving a line of bluish

light, with numerous brilliant sparks. The observer states that the meteor was visible about one minute.

Escanaba, Mich.: at 10.05 p. m., of the 14th a brilliant meteor was seen starting from a point near the zenith and moving northwesterly about 45°, when it disappeared.

Meteors were also reported to have been observed at the various stations, as follows: Fort Thomas, Ariz, 13th; Keeler, Cal., 23d, 28th; Nicolaus, Cal., 26th; Parkston, Dak., 12th; Quitman, Ga., 14th; Pekin, Ill., 25th; Vevay, Ind., 25th; Clinton, Iowa, 18th; Monticello, Iowa, 19th; Cedar Rapids, Iowa, 25th; Woodstock, Md., 8th, 11th, 14th, 20th; Escanaba, Mich., 14th; Kalamazoo, Mich., 22d, 31st; Moorhead, Minn., 13th; Beverly, N. J., 1st, 2d; Menands, N. Y., 1st; Hiram, Ohio, 10th, 11th; Mount Angel, Oregon, 20th; Stateburg, S. C., 24th; Cleburne, Tex., 14th; Salt Lake City, Utah, 18th; Poulney, Vt., 29th; Rappahannock Va., 11th; Variety Mills, Va., 23d; Embarras, Wis., 18th; Delavan, Wis., 24th; La Crosse, Wis., 31st.